Stem Cells & STEM Education - a Summer Internship Program for California High School Students

Grant Award Details

Stem Cells & STEM Education - a Summer Internship Program for California High School Students

Grant Type: SPARK

Grant Number: EDUC3-13123

Project Objective: This Sanford-Burnham based SPARK program will support 6 week internships for ~57 students from socioeconomically disadvantaged families. Beyond research training, SPARK interns will learn about ethical & regulatory issues, how to present & write for scientific vs. lay audiences, participate in patient engagement and community outreach activities, and learn about career options in the academic, private, & clinical sectors.

Investigator:

Name:	Paula Checchi
Institution:	Sanford Burnham Prebys Medical Discovery Institute
Type:	PI

Award Value: $509,000

Status: Pre-Active

Grant Application Details

Application Title: Stem Cells & STEM Education - a Summer Internship Program for California High School Students

Public Abstract: We propose a program that removes the barriers for disadvantaged California high school students to receive mentored, hands-on learning experiences in stem cell biology at a world-class research institute with an esteemed track-record of educating the next generation of scientists, including at the high school level & from under-represented minority (URM) & socioeconomically-challenged backgrounds.

Access to out-of-classroom science enrichment experiences is severely limited for students from low-income & URM backgrounds. They typically experience a precipitous decline in interest in STEM (science, technology, education, math) careers for several reasons: a lack of self-confidence; little encouragement from their superiors or families; a dearth of role models; curricula that offer few hands-on activities. Conversely, entrance into STEM is highest in students who've participated in robust STEM learning experiences in primary or secondary school. When mentored research takes place within a structured peer-learning community, students develop heightened self-confidence & a deep sense of belonging that translates into lasting interest & engagement in STEM. To address these needs, SBP proposes a 5-year SPARK program that will fund 6-week internships for 57 URM students from low-income families.

Our SPARK interns will work alongside our diverse, multidisciplinary community of scientists, trainees, & staff who are committed to conducting excellent, rigorous, cutting-edge studies targeting human disorders. SBP's research enterprise – comprising biologists, chemists, engineers, & clinicians with extensive expertise in stem cell biology & allied disciplines – is dedicated to a mission well-articulated by CIRM: accelerating stem cell-based therapies to all patients of all backgrounds with unmet medical needs.

Our SPARK program is fortunate in being able to avail itself & leverage the resources SBP already has in place for its innovative Graduate School (which is highly individualized & characterized by rapid immersion in research) as well as for our recently-funded CIRM EDUC4 Training Program which, itself, is a hub in a La Jolla Mesa Educational Network. In addition to benchwork, students will participate in a weekly didactic course facilitated by an expert in STEM education. Interns will learn to present their work to scientists, not just within SBP but also at regional science fairs. They will learn to educate lay people by speaking at science festivals & sitting on panels hosted by local high schools. To put a human face on the diseases they'll be studying, interns will meet patients & their families. They will be exposed to multiple career options in the academic, private, & clinical sectors. By the end of their internship, students will not only develop a foundational knowledge of stem cells & their potential in medicine, but also gain a sense of the excitement of a STEM career, closing the gap to postsecondary success for a number of California youth.

Statement of Benefit to California:

Among California's greatest resources are (a) its Institutions which have impacted the world for generations in the fields of science, technology, education, & math (STEM), & (b) its youth. For a shamefully large percentage of California's youth, however, participating in California's leadership in STEM has been severely limited. These are the socio-economically disadvantaged students from under-represented minorities (URMs) and/or low-income regions.

These students typically experience a precipitous decline in interest in STEM careers for several reasons: a lack of self-confidence; little encouragement from their superiors or families; a dearth of role models; curricula that offer few hands-on activities. Conversely, entrance into STEM is highest in students who've participated in robust STEM learning experiences in primary or secondary school. When mentored research takes place within a structured peer-learning community, students develop heightened self-confidence & a deep sense of belonging that translates into lasting interest & engagement in STEM. To address these needs, Sanford Burnham Prebys (SBP) – a research institute with a long track-record of excellence in targeting human disorders & a commitment to training the next generation of scientists of all backgrounds -- proposes a 5-year SPARK program that will fund 6-week internships for 57 URM students from low-income backgrounds.

California will benefit from the SPARK trainees who complete our unique, intensive, multi-disciplinary, collaborative, internship program:

1. Patients will benefit from improved therapies. Our program will enable interns to be more likely to pursue STEM careers, reinforcing, with even greater depth & diversity, California's pipeline of highly-skilled, rigorous stem cell & regenerative medicine scientists & clinicians, who will, in turn, expand the pool of researchers in California working towards the development of novel therapies for a broad range of diseases (neurologic, cardiac, endocrine, myopathic, oncogenic, aging-related, etc.).
2. Increased revenue -- to the State & to companies in the State. Ultimately, these discoveries will be translated to the clinic and/or to the biotech & pharmaceutical sectors, resulting in licensing fees & royalties that will be a return on the State's investment, as well as lowering the costs of health care. In addition, the competitiveness of California's technology sector will be increased with the potential for creating new jobs.
3. Enhanced ability of California to recruit – (a) to recruit exceptionally qualified young and/or "marquee" scientists to its universities & institutions: (b) ability to attract companies to the State because of the large pool of well-trained, qualified, & diverse scientists. Over time, the increased pool of talented & skilled trainees graduating from programs like SPARK will swell the ranks of scientists in California's biotechnology and/or pharmaceutical companies & in its health care facilities.

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